1.2 Evaluate and Select Contract Delivery Method

CMGC requires additional preparation and effort in the Concept Development stage to utilize this delivery method: however, contractor involvement in design reduces errors and improves constructability. Projects may experience a savings in design cost a reduction in construction time and improvement in quality. The contracting method evaluation guide provided below will help to evaluate the benefits and risks of contracting approaches. In general Design Build will support large projects where we lack sufficient internal staff and were little right of way or utility risk is involved. CMGC is more useful for projects where UDOT wants to control design and select innovative solutions the contractor has little experience.

CMGC is also more efficient than DB in the selection process. The RFP for a CMGC process is less than 30 pages while DB requires both an RFQ and an RFP. The DB RFP is more than 500 pages and will cost the contractor $700 k or more to respond to while a typical response cost to a CMGC RFP is $70 k. The trade off is that we are more involved in the CMGC design process than the DB process. It is of course our intent to be more involved in design so that we decide the best trade off for Quality, Cost and Schedule.

Design Bid Build	**Design Build**	**CMGC**
Design and Constructability		
BENEFITS ▪ Complete design ▪ Process familiar to community **RISKS** ▪ Design is independent of contractor experience and abilities	**BENEFITS** ▪ Contractor participation is expected to improve constructability and reduce errors and change orders, risk is identified and assigned an owner, expect fewer overruns ▪ Less time and detail is required to communicate design **RISKS** ▪ Consultant works for Contractor and oversight is increased ▪ UDOT does not control design and scope needs to be well defined	**BENEFITS** ▪ UDOT controls design ▪ Contractor participation is expected to improve constructability, reduce errors and change orders, identify and manage risk, and reduce overruns ▪ Design for Bid Build if a negotiated price is not achieved **RISKS** ▪ May increase design time if negotiation fails
Innovation		

BENEFITS ▪ UDOT can select innovation independent of contractor experience or abilities. **RISKS** ▪ Innovation may be considered a risk and limited to what benefits the contractor	**BENEFITS** ▪ Contractor participation is expected to encourage innovation **RISKS** ▪ Innovation may be limited to contractor abilities and comfort	**BENEFITS** ▪ UDOT can select innovation independent of contractor experience or abilities. ▪ Contractor participation is expected to encourage innovation ▪ Contractor participation is expected to moderate the risk of new technology innovations **RISKS** ▪ UDOT selected innovation may fail or increase cost and schedule
Project Schedule		
BENEFITS ▪ Proven record of performance for construction schedule **RISKS** ▪ Errors in design result in change orders and delay project completion ▪ Low bid selection results in schedule delays when contractors ideal projections do not occur	**BENEFITS** ▪ Less time in design and construction ▪ Design is tailored to contractors abilities ▪ Construction can begin before design is complete **RISKS** ▪ Considerable time and effort in RFP	**BENEFITS** ▪ Compress schedule by early start ▪ Long lead items ▪ Utility & Right of Way ▪ Earthwork ▪ Crossover construction ▪ Pre-casting ▪ Video pipe ▪ MOT improves with contractor inputs ▪ Shorten time between design and construction **RISKS** ▪ Unable to negotiate on price and design is sent out for bid.
Risk		
BENEFITS ▪ Utilities and R/W managed during design using the same consultant which results in less chance of error and rework **RISK** ▪ Contractor may avoid risk. ▪ Motivated to makeup for low bid in change orders	**BENEFITS** ▪ Contractor will help identify and accept ownership of some risk ▪ Risk transfer to the Contractor **RISK** ▪ Increased proposal costs may limit bidders ▪ Higher risk for projects with R/W and Utilities ▪ Contractor may avoid risk. ▪ Contractor may drive consultant to reduce cost at risk to quality ▪ No cost savings return to UDOT	**BENEFITS** ▪ Contractor will help identify and manage risk ▪ R/W after design reduces errors and rework **RISK** ▪ Opportunity to increase cost on non proposal items ▪ Lacks motivation to manage small quantity costs ▪ Sole source contract
Public		
BENEFIT ▪ Low cost provider ▪ Proven delivery method	**BENEFIT** ▪ Reduced delivery time ▪ Reduced errors and omissions ▪ Create a quick fixed cost	**BENEFIT** ▪ Reduced delivery time ▪ Reduced errors and omissions
Cost		
BENEFIT ▪ Low bid **RISK** ▪ Errors, omissions, and unknowns will drive up cost through change orders	**BENEFIT** ▪ Contractor input into MOT and Utilities should reduce cost **RISK** ▪ We are paying for the contractors involvement in the design phase which may increase total cost	**BENEFIT** ▪ Unknown conditions, ROW, and Utilities may drive up cost **RISK** ▪ We pay for risk transferred to contractor ▪ We pay for RFP development by multiple contractors

		▪ We pay for contractor involvement in design
Project Types		
	▪ Good for projects in which UDOT wants to maintain control and apply new technology and processes ▪ Better for Projects with a lot of R/W and Utility issues ▪ Better for projects that can benefit from early purchases	▪ Good for projects with little R/W and minimal Utility impacts such as interstate and rural Road projects

The CMGC process begins with the Project Manager preparing a written justification of the benefits to include innovation, cost savings, schedule savings, etc. These projects are submitted to project development every six months for approval. The six-month window is a requirement of FHWA for federally funded projects. They want a range of projects to include local government projects, bridge projects, ITS projects, large projects, and mixed construction projects. There intent is to evaluate the CMGC method on a variety of projects to measure its potential to reduce life cycle costs while maintaining product quality. The gosl is to have 24 projects with 6 projects in each region over a 2-year period. If no Federal funding is used 6 additional projects may be approved per region. State funded projects do not require FHWA approval and are approved by Engineering Services.

The project justification must be specific to the project being proposed. The contract evaluation guide is a compilation of potential benefits and risks from many projects.

2.1 Create CMGC Design

The design process is improved when a contractor is selected early. The more complete the design the less influence a contractor has in the process because with time it becomes more difficult to make design changes. If an external consultant is selected to develop the design and create the RFP to select the contractor the process is delayed even further. A nominal timeline for the selection process is a 100 days.

To shorten the timeline it is suggested that an internal designer be utilized to develop plans sufficiently to estimate initial quantities. These quantities are used during the contractor selection process. When these quantities can be estimated in the concept phase before project approval then it is possible to shorten project time even further.

After a contractor is selected and the contract is awarded, UDOT may request the contractor submit a bid on the entire project, an early phase of the project (early action items, or long lead items). Each phase requires a separate contract and contracting process to include the contract-advertising checklist.

We need the contractor involved in the design and to make suggestions on how to manage cost and schedule and improve quality. To achieve these goals each new CMGC project does partnering training so that the designer and contractor understand their roles and responsibilities and our expectations.

Risk identification along with estimating the probability of cost and schedule impacts is a required activity. The process needs to identify risk, the cost of that risk, and the probability of the risk becoming an event. It is then possible to rank the risk and assign an owner to the highest-ranking risks. The risk owner could be UDOT, the Designer, or the contractor. The risk owner needs to develop a mitigation strategy. It is recommended that the contractor facilitate this risk assessment and review risk in all project meetings. Having the contractor track the risk will assist them in reducing risk during design and identifying risk in their cost proposal during negotiation. This also helps keep the project within budget. CMGC is about reducing the risk for them and us.

If you chose to do Value Engineering, the beginning of the project is the best time to apply this so that contractor suggestions can be rated and tracked with the Value Engineering suggestions.

Establish a just in time decision resolution process for all contractor suggestions. Do not wait for Plan in Hand or PS&E review to consider suggestions. This is too late in the process. The contractor needs to understand that not all suggestions can or will be applied and the designer needs to understand the need to provide timely analysis and resolution of all suggestions. The designer must hold to an established design schedule so that schedule risk is not pushed onto the contractor during construction.

It is important that early construction contract awards be planned and independent so they do not commit UDOT to the contractor for final construction until a negotiated price for construction is accomplished. To insure phase independence a management review is required by the Project Development office. The process is for the region to plan out their phase approach and submit each phase request to Project Development. Project Development forms a team of reviewers who establish evaluation criteria and evaluate the proposal for independence. On early procurements for example the criteria may ask the question do the items proposed require a long lead to procure and will the purchased items belong to UDOT in the event that the contractor is not selected for final construction.

Before proceeding to any contract award the design must be completed to a level of detail acceptable to the contractor, the designer, and UDOT. Then the award process can begin with cost submittals into the electronic vault from the contractor, the designer, and the third party independent estimator. If the contractor's initial bid is not within 110% of the independent estimate, the selection team has an opportunity to clarify assumptions with the contractor. Based on this information, the selection team will negotiate with the contractor. In addition to the Independent Cost Estimate a Red Flag analysis is performed by Stanley Consultants. This analysis is intended to validate the engineer's estimate and is more than a traditional red flag analysis.

The primary goal of the independent cost estimates is to negotiate a fair price for UDOT at a fair price to the contractor and in the best interest of the State. . If the contractor's proposal is not within 10% of the Independent Cost Estimate a corporate decision must be made to continue the CMGC process or to proceed with a Bid Build approach. If a decision is made to continue with CMGC the designer and consultant will need to refine the design and all three cost estimates must be updated and resubmitted to the electronic vault for consideration. It takes a corporate decision to award a contract that exceeds the Independent Cost Estimate by 10% or more.

Potentially, this process can lead to surprises when the bids are opened, especially if the approach to price varies significantly among the estimators. Using the cost model required in the RFP to update expected costs during design will reduce surprises. The cost model improves communication during the design and reduces problems in negotiation.

The Project manager should oversee meetings where price is discussed. Prices are discussed between the designer and the contractor, but not with the Independent Cost Estimator. This encourages incremental development of the cost estimates instead of waiting until the design is complete.

When the design is far enough along, the designer should prepare a measurement and payment list for the contractor and independent cost estimator. When bid items are understood a fair comparison is possible for each line item in the bid. Price comparisons are understood and accepted when the Project Manager communicates the approach to price for each bid item.

The Independent Cost Estimator may begin to price items independently, based upon agreed measurements and payments. At least a week should be given to the Independent Estimator and the Contractor after final plans are released for them to complete their estimates and submit them to the Electronic Vault. The Engineers Estimate, the Independent Cost Estimate and the Contractors prices Estimate must be submitted to the electronic vault for bid opening. The engineer's estimate may go in early and the project manager may periodically review this estimate before it is locked.

To facilitate this process the contractor is encouraged to seek three bids on specialty items where work is subcontracted. Examples of specialty items may include traffic signals, HMA, street lighting, ATMS, accelerated bridge elements, etc. These items will be discussed at periodic cost accounting meetings and the contractor will indicate his choice based on best value and risk. The independent estimator, designer, and project manager may use these prices in their cost estimates, but the independent cost estimator must seek as many independent bids as possible to validate selected bids.

At bid opening the estimates are compared to the contractors price. The Engineers Estimate and the contractor's price should not vary more than 2% since they have communicated price during the design. If the cost is off more than 2% they have not communicated. It is not expected that the cost agree perfectly. It is ok for them to disagree on the cost of items as long as they have discussed the cost and know why they disagree. The validation of the contractors cost is the Independent Cost Estimate and the validation of the Engineers Estimate is the Red Flag analysis. If the ICE and the contractors propose cost are off by more than 10% we do not have a fair price and a renegotiation is required or we need to go Bid Build.